

Question & Answers: Health Dangers of Methane|Hydrogen Sulfide|Sewer Gas

Question

Methane and Hydrogen Sulfide Gases

My daughter lives in Mexico. She has a very strong smell in all 3 of the bathrooms. The sink drains were installed upside-down and there is no seal on the toilets. This smell is making her whole family very sick. How dangerous is this, and how can she determine how bad it actually is? Limited resources in Mexico. I am concerned for their safety. Can you give me some more info. Her husband needs to be convinced on concerns for health. They have 5 little kids in the house.

Thank You

Answer

Before I even start to answer this question, I advice that your daughter call a certified plumber/professional sewer company or contact her local government over there for recommendations of certified companies to help them fix the sewer gas odor you described.

Before they try to open the sewer lid, the worker/plumber/sewer contractor should be aware or made to be aware that sewer manholes or any enclosed space within the sewer system contain invisible life threatening dangers such as Hydrogen sulfide gas, explosive gases and absence of oxygen.

Hydrogen sulfide (H_2S) is a highly poisonous and inflammable gas which occurs naturally in natural gas, volcanic gases, crude petroleum and other natural occurrences. It is also produced by the bacterial breakdown of waste materials usually found in waste treatment plants, sewer systems, swamps. Hydrogen sulfide gas has a foul odor of rotten eggs similar to what you described in your question "very strong smell in all 3 of the bathrooms". For the purpose of this question, I will base my answers on sewer gas (Hydrogen sulfide produced by the break down of waste materials in sewer systems/waste management systems) This is how Hydrogen sulfide is produced in sewer systems/waste management systems: When microorganisms decompose waste materials in the sewer system/waste management system, this is done in the absence of oxygen and the resulting gas is Hydrogen sulfide (sewer gas)

What Causes Hydrogen Sulfide | Sewer Gas Exposure in Homes

- Faulty plumbing like what you described in your question causes sewer gas exposure "The sink drains were installed upside-down".
- Sewer drains that have dry traps can allow hydrogen sulfide gas to escape into the home.
- Broken seals around the toilet or in your daughter's case no seals at all on the toilets can allows water to siphon or dry out the traps thereby letting sewer gas smells to enter the home
- Air leak at the wax ring of the toilet
- Air leak in the vent pipe.

Health Implications and Dangers of Hydrogen Sulfide |Sewer Gas

Exposure to Hydrogen sulfide is health threatening, however at very low level, the health effect is usually minor like eye irritation. But when the level of exposure to Hydrogen sulfide is high, this can result in serious health problems and death in worst case scenario. I strongly recommend that your daughter call a certified plumbing or sewer company immediately.

Health Dangers of Hydrogen Sulfide Exposure

Health Problem	Level of Hydrogen Sulfide Exposure
• Eye irritation	10–20 ppm
• Eye damage	50–100 ppm
• Paralysis in the sense of smell	100 - 150 ppm & above
• Asphyxiation (Loss of breathing)	above 150 ppm
• Respiratory depression	above 150 ppm
• Death	above 150 ppm

Preventive and Safety Measures

How to Prevent Sewer Gas From Entering the Home

Exposure to hydrogen sulfide gas can be reduced or prevented by ensuring that plumbing fixtures and pipes are installed and maintained properly. Your daughter should get a plumbing company to locate the source of the gas and eliminate it, install the toilets properly with seals making sure that the toilets are tightly sealed to the floor, update her plumbing in order to fix the sink drain that was installed upside-down. I am sure she can find a plumber to do these over there. But if in doubt, she should contact their local government for recommendations of certified plumbers to:

- Locate and eliminate the source of sewer gas in their home.
- Correct the faulty plumbing with the sink drain that was installed upside-down
- Make sure that the toilets are tightly sealed to the floor with the right seals.

Preventing Sewer Gas Odor in Homes - DIY Tutorial

While they wait for help from a professional, she should try the following Do-it-yourself tutorials:

- Pour in 1 quart of warm water each into all of the drains in the house: sinks, tubs, showers and floor drains.
- Follow our home-made drain solution tutorial here ► [home made drain solution](#) to help neutralize the odor
- Increase ventilation in all of the rooms by opening all doors and windows to let in air into the house, that is assuming the sewer gas odor is only present inside of the house. If the odor is coming from outside of the house, then opening doors and windows may not help.

Methane (CH₄) is another type of natural gas that is highly flammable. Methane displaces oxygen and this can be hazardous in an enclosed space or poorly ventilated room. If the displacement of oxygen is excessive, especially when supply of oxygen in a room or enclosed space is reduced to up to below 19.5% it can cause asphyxiation (choking or suffocation) and in worst cases death.

Health Dangers of Methane Gas

Methane gas is an asphyxiant gas which reduces oxygen supply. Oxygen deficiency/asphyxiation is common in an enclosed space with displaced oxygen up to below 19.5% and results in the following health conditions - choking, disturbed respiration, increase in pulse rate and breathing, muscular in-coordination, abnormal fatigue, vomiting, collapsing, inability to move, lack of consciousness, gasping for air, convulsive movements, respiratory collapse and in worst case scenario death.

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